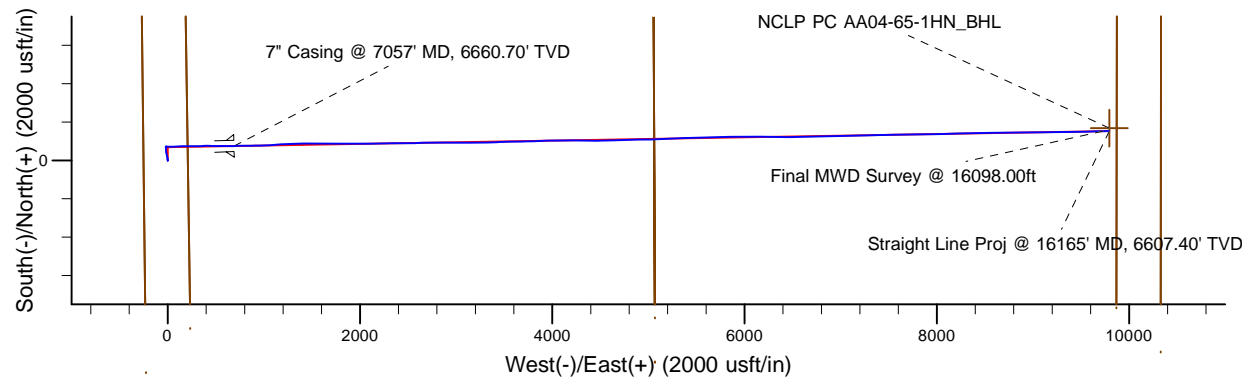


Project: Weld County, CO (NAD 83)
 Site: Sec. 4-T6N-R63W (NCLP PC AA04 Pads)
 Well: NCLP PC AA04-65-1HN
 Wellbore: Plan B
 Design: Final Surveys

Noble Energy



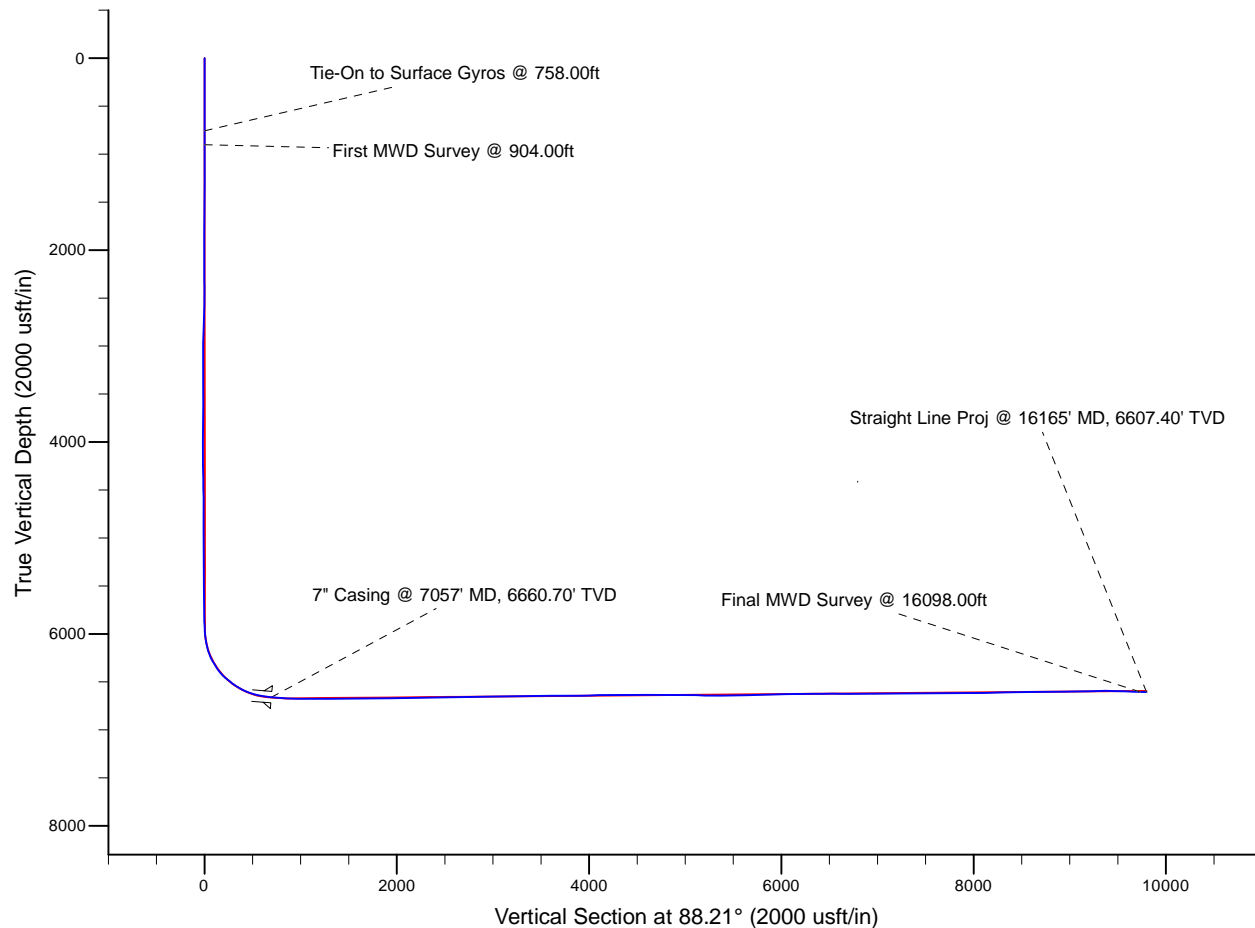
LEGEND

- NCLP PC AA04-65-1HN, Plan B, B0 - PROPOSAL V0
- Final Surveys

Platted SHL: 2201' FSL, 250' FWL
 Platted Lat/Long: 40.51457° N, 104.45032° W
 Location: Sec. 4-T6N-R63W

7" Casing: ~2338.67' FSL, ~943.83' FWL
 Lat/Long: 40° 30' 53.867 N, 104° 26' 52.172 W
 State Planes - CO Northern: 1,432,177.26' N, 3,292,537.71' E
 Location: Sec. 4-T6N-R63W

BHL: ~2309.53' FSL, ~536.61' FEL
 Lat/Long: 40° 30' 54.321 N, 104° 24' 54.299 W
 State Planes - CO Northern: 1,432,332.87' N, 3,301,640.08' E
 Location: Sec. 3-T6N-R63W



WELL DETAILS: NCLP PC AA04-65-1HN

Ground Level: 4711.00
 RKB=24 @ 4735.00usft (H&P 343)

Created By: Fred Hartmann
 Created On: 12/03/2013

Noble Energy

Weld County, CO (NAD 83)

Sec. 4-T6N-R63W (NCLP PC AA04 Pads)

NCLP PC AA04-65-1HN

Design: Final Surveys

Sperry Drilling Services

Final Survey Report

03 December, 2013

Well Coordinates: 1,432,025.79 N, 3,291,845.87 E (40° 30' 52.45" N, 104° 27' 01.15" W)

Ground Level: 4,711.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well NCLP PC AA04-65-1HN

RKB=24 @ 4735.00usft (H&P 343)

N

Grid

API - US Survey Feet - Custom

HALLIBURTON

Design Report for NCLP PC AA04-65-1HN - Final Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
249.00	0.60	151.83	249.00	-1.15	0.62	0.58	0.24
529.00	0.40	317.43	528.99	-1.72	0.65	0.59	0.35
758.00	0.60	24.73	757.98	-0.04	0.61	0.61	0.25
Tie-On to Surface Gyros @ 758.00ft							
904.00	0.62	334.31	903.98	1.36	0.58	0.63	0.36
First MWD Survey @ 904.00ft							
997.00	0.74	352.79	996.97	2.41	0.29	0.37	0.27
1,090.00	0.65	14.56	1,089.96	3.52	0.35	0.46	0.30
1,183.00	0.83	13.67	1,182.96	4.68	0.64	0.79	0.19
1,276.00	1.05	353.93	1,275.94	6.18	0.71	0.90	0.42
1,370.00	1.00	338.23	1,369.93	7.80	0.31	0.56	0.30
1,463.00	0.53	9.35	1,462.92	8.98	0.08	0.36	0.66
1,556.00	0.98	327.36	1,555.91	10.07	-0.28	0.04	0.74
1,648.00	1.02	326.62	1,647.90	11.42	-1.15	-0.79	0.05
1,743.00	0.97	351.50	1,742.89	12.92	-1.74	-1.33	0.45
1,838.00	0.72	333.19	1,837.87	14.25	-2.12	-1.68	0.38
1,933.00	0.77	23.14	1,932.87	15.37	-2.14	-1.66	0.66
2,027.00	1.18	346.66	2,026.85	16.89	-2.12	-1.59	0.77
2,122.00	1.32	6.49	2,121.83	18.93	-2.22	-1.63	0.48
2,216.00	1.04	27.71	2,215.81	20.76	-1.70	-1.05	0.55
2,311.00	0.78	27.26	2,310.80	22.10	-1.00	-0.31	0.27
2,406.00	1.19	19.16	2,405.79	23.61	-0.38	0.36	0.45
2,500.00	3.08	349.24	2,499.72	27.01	-0.53	0.31	2.27
2,595.00	4.81	340.14	2,594.49	33.26	-2.36	-1.32	1.93
2,690.00	5.97	340.38	2,689.07	41.66	-5.38	-4.07	1.22
2,784.00	8.04	347.02	2,782.36	52.68	-8.49	-6.84	2.36
2,879.00	9.18	348.56	2,876.29	66.58	-11.49	-9.40	1.22
2,974.00	11.07	349.40	2,969.81	82.97	-14.67	-12.07	2.00
3,069.00	11.01	357.11	3,063.06	101.00	-16.81	-13.64	1.55
3,164.00	8.47	1.81	3,156.68	117.05	-17.04	-13.37	2.80
3,259.00	6.35	1.67	3,250.88	129.30	-16.67	-12.62	2.23
3,354.00	3.80	354.72	3,345.50	137.69	-16.80	-12.49	2.76
3,448.00	1.83	5.08	3,439.39	142.28	-16.96	-12.50	2.16
3,543.00	0.31	151.83	3,534.37	143.57	-16.70	-12.20	2.21
3,638.00	0.33	261.59	3,629.37	143.30	-16.85	-12.36	0.55
3,733.00	0.68	229.02	3,724.37	142.89	-17.55	-13.07	0.46
3,828.00	1.19	205.05	3,819.35	141.63	-18.39	-13.95	0.67
3,923.00	1.26	222.87	3,914.33	139.97	-19.52	-15.13	0.41
4,018.00	0.15	6.77	4,009.33	139.33	-20.22	-15.85	1.46
4,112.00	0.39	301.92	4,103.32	139.62	-20.47	-16.10	0.38
4,207.00	0.54	33.37	4,198.32	140.16	-20.50	-16.11	0.71
4,301.00	2.04	85.30	4,292.30	140.67	-18.59	-14.18	1.87
4,396.00	1.59	53.75	4,387.25	141.59	-15.84	-11.41	1.13
4,491.00	0.35	38.27	4,482.24	142.60	-14.60	-10.13	1.32
4,586.00	0.63	0.54	4,577.23	143.35	-14.41	-9.92	0.43
4,681.00	1.05	11.47	4,672.22	144.72	-14.24	-9.70	0.47
4,776.00	0.09	8.29	4,767.22	145.65	-14.05	-9.49	1.01
4,871.00	0.23	6.69	4,862.22	145.91	-14.02	-9.45	0.15
4,966.00	0.31	60.68	4,957.22	146.23	-13.77	-9.19	0.27

Design Report for NCLP PC AA04-65-1HN - Final Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
5,060.00	0.31	340.67	5,051.21	146.59	-13.64	-9.04	0.42
5,154.00	0.37	164.80	5,145.21	146.54	-13.64	-9.05	0.72
5,248.00	0.68	184.93	5,239.21	145.69	-13.61	-9.04	0.38
5,343.00	0.72	103.31	5,334.21	144.99	-13.08	-8.53	0.96
5,437.00	1.15	112.28	5,428.19	144.50	-11.63	-7.10	0.48
5,532.00	1.37	91.24	5,523.17	144.11	-9.61	-5.10	0.54
5,627.00	0.93	108.05	5,618.15	143.85	-7.74	-3.24	0.58
5,722.00	0.74	98.43	5,713.14	143.52	-6.40	-1.91	0.25
5,843.00	0.47	131.12	5,834.13	143.08	-5.26	-0.78	0.35
5,960.00	2.77	90.26	5,951.08	142.75	-2.07	2.40	2.08
6,007.00	5.86	88.34	5,997.94	142.81	1.47	5.93	6.58
6,055.00	8.25	87.93	6,045.58	143.01	7.36	11.83	4.98
6,101.00	9.40	88.64	6,091.03	143.22	14.41	18.89	2.51
6,149.00	12.60	92.69	6,138.14	143.06	23.56	28.03	6.85
6,196.00	17.29	92.09	6,183.54	142.57	35.67	40.11	9.98
6,244.00	23.46	86.60	6,228.52	142.88	52.36	56.80	13.44
6,290.00	28.31	85.25	6,269.89	144.32	72.38	76.86	10.62
6,338.00	30.16	85.28	6,311.78	146.26	95.74	100.27	3.85
6,384.00	33.77	87.59	6,350.80	147.75	120.04	124.60	8.28
6,432.00	37.62	89.83	6,389.77	148.35	148.03	152.60	8.47
6,479.00	43.06	90.73	6,425.58	148.19	178.44	182.99	11.64
6,527.00	49.30	89.29	6,458.80	148.21	213.06	217.59	13.18
6,573.00	51.99	89.13	6,487.97	148.70	248.62	253.15	5.85
6,621.00	52.51	88.35	6,517.36	149.53	286.56	291.10	1.68
6,668.00	57.65	88.54	6,544.25	150.58	325.07	329.62	10.94
6,716.00	61.20	88.57	6,568.67	151.62	366.38	370.94	7.40
6,763.00	63.71	89.91	6,590.40	152.17	408.04	412.60	5.91
6,858.00	73.69	90.49	6,624.86	151.84	496.44	500.95	10.52
6,906.00	77.49	90.52	6,636.81	151.43	542.92	547.39	7.92
6,984.00	80.31	90.89	6,651.82	150.49	619.45	623.85	3.65
7,044.00	84.87	88.03	6,659.56	151.06	678.92	683.31	8.95
7,057.00	85.09	88.25	6,660.70	151.48	691.86	696.26	2.40
7" Casing @ 7057' MD, 6660.70' TVD							
7,139.00	86.51	89.62	6,666.70	153.00	773.63	778.03	2.40
7,234.00	86.86	89.33	6,672.19	153.87	868.46	872.85	0.48
7,329.00	87.87	88.23	6,676.56	155.89	963.34	967.74	1.57
7,424.00	89.97	88.35	6,678.35	158.72	1,058.27	1,062.72	2.21
7,519.00	90.25	84.73	6,678.17	164.45	1,153.08	1,157.66	3.82
7,614.00	91.33	87.53	6,676.86	170.87	1,247.85	1,252.58	3.16
7,708.00	88.86	86.13	6,676.70	176.06	1,341.69	1,346.54	3.02
7,803.00	89.38	89.97	6,678.16	179.29	1,436.61	1,441.51	4.08
7,897.00	93.08	92.41	6,676.15	177.34	1,530.54	1,535.34	4.71
7,992.00	89.91	90.58	6,673.67	174.87	1,625.46	1,630.14	3.85
8,087.00	92.04	90.29	6,672.05	174.15	1,720.44	1,725.05	2.26
8,182.00	90.28	88.97	6,670.13	174.76	1,815.41	1,819.99	2.32
8,277.00	89.35	90.75	6,670.43	174.99	1,910.41	1,914.95	2.11
8,372.00	91.14	90.23	6,670.03	174.18	2,005.40	2,009.87	1.96
8,467.00	91.23	87.91	6,668.06	175.72	2,100.36	2,104.83	2.44
8,562.00	89.91	88.50	6,667.12	178.70	2,195.31	2,199.82	1.52
8,656.00	90.99	90.70	6,666.38	179.35	2,289.29	2,293.78	2.61
8,751.00	90.52	88.54	6,665.13	179.98	2,384.28	2,388.74	2.33

Design Report for NCLP PC AA04-65-1HN - Final Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,846.00	91.23	90.53	6,663.68	180.75	2,479.26	2,483.70	2.22
8,941.00	91.11	88.86	6,661.74	181.26	2,574.23	2,578.64	1.76
9,036.00	90.37	87.83	6,660.51	184.00	2,669.18	2,673.63	1.33
9,131.00	91.51	89.63	6,658.95	186.11	2,764.14	2,768.61	2.24
9,225.00	92.10	90.27	6,655.99	186.19	2,858.10	2,862.52	0.93
9,320.00	90.37	90.48	6,653.94	185.57	2,953.07	2,957.43	1.83
9,415.00	89.88	90.93	6,653.74	184.40	3,048.06	3,052.34	0.70
9,510.00	91.17	89.24	6,652.87	184.26	3,143.05	3,147.28	2.24
9,605.00	91.88	88.97	6,650.34	185.74	3,238.00	3,242.23	0.80
9,700.00	89.88	88.13	6,648.88	188.15	3,332.96	3,337.21	2.28
9,795.00	90.15	87.61	6,648.85	191.68	3,427.89	3,432.21	0.62
9,889.00	91.85	88.79	6,647.21	194.63	3,521.83	3,526.19	2.20
9,984.00	90.71	89.47	6,645.09	196.07	3,616.79	3,621.15	1.40
10,079.00	89.41	87.85	6,644.99	198.29	3,711.76	3,716.14	2.19
10,174.00	89.57	87.75	6,645.84	201.94	3,806.68	3,811.14	0.20
10,269.00	91.39	89.34	6,645.04	204.35	3,901.64	3,906.12	2.54
10,364.00	91.94	88.45	6,642.28	206.18	3,996.58	4,001.08	1.10
10,459.00	91.23	88.45	6,639.65	208.75	4,091.51	4,096.04	0.75
10,551.00	90.25	89.85	6,638.46	210.12	4,183.49	4,188.02	1.86
10,643.00	89.38	91.57	6,638.76	208.98	4,275.48	4,279.92	2.10
10,737.00	90.95	91.84	6,638.49	206.18	4,369.43	4,373.74	1.69
10,828.00	90.19	88.93	6,637.59	205.57	4,460.42	4,464.66	3.30
10,921.00	90.49	87.91	6,637.03	208.13	4,553.38	4,557.66	1.14
11,015.00	90.77	89.18	6,636.00	210.52	4,647.34	4,651.65	1.38
11,107.00	89.69	88.47	6,635.63	212.41	4,739.32	4,743.64	1.40
11,200.00	88.21	88.08	6,637.33	215.20	4,832.26	4,836.62	1.65
11,292.00	88.86	88.43	6,639.69	218.01	4,924.18	4,928.59	0.80
11,385.00	92.04	89.52	6,638.96	219.67	5,017.15	5,021.57	3.61
11,478.00	87.78	86.06	6,639.10	223.25	5,110.05	5,114.53	5.90
11,571.00	87.87	87.94	6,642.63	228.12	5,202.85	5,207.44	2.02
11,664.00	89.72	89.11	6,644.59	230.51	5,295.79	5,300.41	2.35
11,758.00	90.83	87.84	6,644.14	233.01	5,389.75	5,394.41	1.79
11,851.00	91.57	88.13	6,642.19	236.28	5,482.68	5,487.38	0.85
11,944.00	91.45	87.89	6,639.74	239.51	5,575.59	5,580.35	0.29
12,037.00	90.74	88.74	6,637.96	242.24	5,668.53	5,673.33	1.19
12,131.00	90.12	88.78	6,637.26	244.28	5,762.50	5,767.33	0.66
12,226.00	93.21	89.65	6,634.50	245.58	5,857.44	5,862.26	3.38
12,320.00	90.40	88.44	6,631.54	247.14	5,951.37	5,956.19	3.25
12,415.00	91.42	88.76	6,630.03	249.47	6,046.33	6,051.17	1.13
12,510.00	91.42	90.28	6,627.67	250.26	6,141.29	6,146.12	1.60
12,605.00	91.17	92.15	6,625.52	248.25	6,236.24	6,240.96	1.99
12,700.00	89.57	91.39	6,624.91	245.31	6,331.19	6,335.77	1.86
12,800.00	91.02	90.53	6,624.40	243.64	6,431.17	6,435.65	1.69
12,895.00	89.60	89.03	6,623.88	244.00	6,526.17	6,530.61	2.17
12,990.00	89.60	88.66	6,624.55	245.92	6,621.15	6,625.60	0.39
13,085.00	89.51	87.78	6,625.28	248.87	6,716.10	6,720.59	0.93
13,180.00	89.88	88.35	6,625.79	252.08	6,811.04	6,815.59	0.72
13,275.00	91.32	89.68	6,624.79	253.71	6,906.02	6,910.57	2.06
13,370.00	91.97	89.70	6,622.07	254.22	7,000.97	7,005.50	0.68
13,465.00	89.48	88.37	6,620.87	255.82	7,095.94	7,100.47	2.97
13,559.00	89.32	87.53	6,621.85	259.19	7,189.88	7,194.47	0.91

Design Report for NCLP PC AA04-65-1HN - Final Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
13,654.00	89.85	87.89	6,622.54	262.98	7,284.80	7,289.46	0.67
13,749.00	90.68	87.94	6,622.10	266.44	7,379.73	7,384.46	0.88
13,844.00	91.51	90.12	6,620.28	268.05	7,474.70	7,479.42	2.46
13,939.00	90.49	89.10	6,618.62	268.69	7,569.68	7,574.38	1.52
14,034.00	90.43	90.56	6,617.86	268.97	7,664.67	7,669.33	1.54
14,129.00	89.88	88.54	6,617.60	269.72	7,759.66	7,764.30	2.20
14,224.00	89.32	88.56	6,618.27	272.12	7,854.63	7,859.30	0.59
14,319.00	91.05	89.69	6,617.96	273.57	7,949.61	7,954.28	2.18
14,413.00	90.15	89.33	6,616.98	274.38	8,043.60	8,048.25	1.03
14,508.00	92.13	88.22	6,615.09	276.41	8,138.56	8,143.22	2.39
14,603.00	92.62	87.67	6,611.15	279.81	8,233.41	8,238.14	0.78
14,698.00	90.86	87.56	6,608.27	283.76	8,328.28	8,333.08	1.86
14,793.00	90.15	89.57	6,607.43	286.14	8,423.24	8,428.07	2.24
14,887.00	89.51	88.86	6,607.71	287.43	8,517.23	8,522.06	1.02
14,982.00	90.99	90.00	6,607.29	288.38	8,612.22	8,617.03	1.97
15,077.00	91.20	88.41	6,605.48	289.69	8,707.20	8,712.00	1.69
15,172.00	90.46	88.52	6,604.10	292.24	8,802.15	8,806.98	0.79
15,267.00	90.28	90.69	6,603.49	292.89	8,897.14	8,901.95	2.29
15,362.00	90.46	89.83	6,602.87	292.46	8,992.14	8,996.88	0.92
15,457.00	91.42	90.00	6,601.32	292.60	9,087.12	9,091.83	1.03
15,551.00	92.87	90.05	6,597.80	292.56	9,181.05	9,185.71	1.54
15,646.00	91.82	88.73	6,593.91	293.57	9,275.97	9,280.61	1.77
15,741.00	88.58	88.05	6,593.58	296.24	9,370.91	9,375.60	3.48
15,836.00	88.36	89.30	6,596.12	298.44	9,465.85	9,470.56	1.34
15,931.00	88.37	88.52	6,598.83	300.24	9,560.80	9,565.51	0.82
16,026.00	87.78	88.20	6,602.02	302.96	9,655.70	9,660.46	0.71
16,098.00	87.78	88.33	6,604.81	305.14	9,727.62	9,732.40	0.18
Final MWD Survey @ 16098.00ft							
16,165.00	87.78	88.33	6,607.40	307.09	9,794.54	9,799.35	0.00
Straight Line Proj @ 16165' MD, 6607.40' TVD							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
758.00	757.98	-0.04	0.61	Tie-On to Surface Gyros @ 758.00ft
904.00	903.98	1.36	0.58	First MWD Survey @ 904.00ft
16,098.00	6,604.81	305.14	9,727.62	Final MWD Survey @ 16098.00ft
16,165.00	6,607.40	307.09	9,794.54	Straight Line Proj @ 16165' MD, 6607.40' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	NCLP PC AA04-65-1HN_BHLreloc	88.21	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
249.00	758.00	Surface Gyros	Flexi-Shot

Design Report for NCLP PC AA04-65-1HN - Final Surveys

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
758.00	7,044.00	MWD Surveys - Vert/Build	MWD+IFR1+MS_WY
7,139.00	16,098.00	MWD Surveys - Lateral	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
7,057.00	6,660.70	7" Casing @ 7057' MD, 6660.70' TVD	7	8-3/4

Wellbore Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
NCLP PC AA04-65-1H - actual wellpath misses target center by 0.02usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	0.02	0.00	1,432,025.81	3,291,845.86	40° 30' 52.452 N	104° 27' 1.152 W
Sec. 4-T6N-R63W_461 - actual wellpath misses target center by 1603.00usft at 2.45usft MD (2.45 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	-5.00	-1,602.87	18.97	1,430,422.97	3,291,864.84	40° 30' 36.612 N	104° 27' 1.152 W
Point 1				-5.00	4,210.91	154.49	1,434,633.74	3,292,019.32	
Point 2				-5.00	-144.02	216.88	1,430,278.95	3,292,081.71	
Point 3				-5.00	-33.48	5,050.45	1,430,389.49	3,296,915.12	
Point 4				-5.00	70.50	9,850.70	1,430,493.47	3,301,715.22	
Point 5				-5.00	4,324.23	9,854.02	1,434,747.06	3,301,718.54	
Point 6				-5.00	4,270.97	5,032.02	1,434,693.80	3,296,896.70	
Point 7				-5.00	4,210.91	154.49	1,434,633.74	3,292,019.32	
Sec. 4-T6N-R63W_SL - actual wellpath misses target center by 1603.00usft at 2.45usft MD (2.45 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	-5.00	-1,602.87	18.97	1,430,422.97	3,291,864.84	40° 30' 36.612 N	104° 27' 1.152 W
Point 1				-5.00	4,670.92	-305.53	1,435,093.74	3,291,559.32	
Point 2				-5.00	-604.04	-243.14	1,429,818.95	3,291,621.71	
Point 3				-5.00	-493.50	5,050.45	1,429,929.49	3,296,915.12	
Point 4				-5.00	4,730.99	5,032.02	1,435,153.81	3,296,896.70	
Point 5				-5.00	-493.50	5,050.45	1,429,929.49	3,296,915.12	
Point 6				-5.00	-389.51	10,310.71	1,430,033.47	3,302,175.21	
Point 7				-5.00	4,784.25	10,314.03	1,435,207.06	3,302,178.53	
Point 8				-5.00	4,730.99	5,032.02	1,435,153.81	3,296,896.70	
Point 9				-5.00	4,670.92	-305.53	1,435,093.74	3,291,559.32	
NCLP PC AA04-65-1H - actual wellpath misses target center by 12.94usft at 16165.00usft MD (6607.40 TVD, 307.09 N, 9794.54 E) - Point	0.00	0.00	6,594.48	306.52	9,795.05	1,432,332.30	3,301,640.60	40° 30' 54.316 N	104° 24' 54.293 W
NCLP PC AA04-65-1H - actual wellpath misses target center by 29.73usft at 16165.00usft MD (6607.40 TVD, 307.09 N, 9794.54 E) - Point	0.00	0.00	6,611.57	336.52	9,795.05	1,432,362.30	3,301,640.60	40° 30' 54.612 N	104° 24' 54.288 W

Directional Difficulty Index

Average Dogleg over Survey:	1.85 °/100usft	Maximum Dogleg over Survey:	13.44 °/100usft at 6,244.00 usft
Net Tortousity applicable to Plans:	1.14 °/100usft	Directional Difficulty Index:	6.859

Audit Info

North Reference Sheet for Sec. 4-T6N-R63W (NCLP PC AA04 Pads) - NCLP PC
AA04-65-1HN

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to RKB=24 @ 4735.00usft (H&P 343). Northing and Easting are relative to NCLP PC AA04-65-1HN

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996742

Grid Coordinates of Well: 1,432,025.79 usft N, 3,291,845.87 usft E

Geographical Coordinates of Well: 40° 30' 52.45" N, 104° 27' 01.15" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,165.00usft
the Bottom Hole Displacement is 9,799.35usft in the Direction of 88.20° (Grid).

Magnetic Convergence at surface is: -7.73° (19 November 2013, , BGGM2013)

